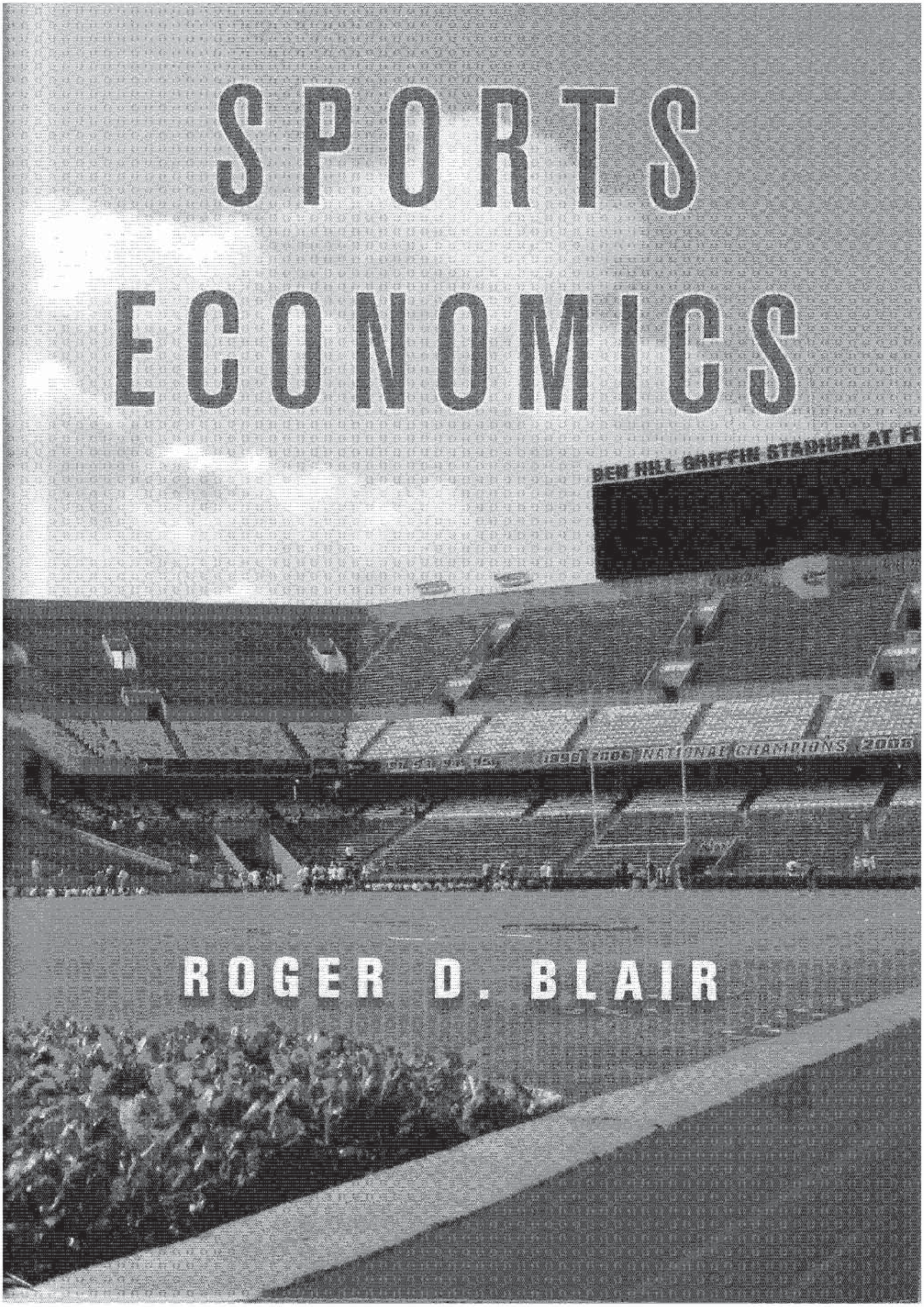
Pls Ex. 8
(JCCX74 - Roger D. Blair, Sports Economics (Cambridge University Press 2012))

Part 1


SPORTS
ECONOMICS
BEN HILL GRIFFIN STADIUM AT FL
1996 2006 NATIONAL CHAMPIONS 2008
ROGER D. BLAIR

Sports Economics

Roger D. Blair

University of Florida

CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press
32 Avenue of the Americas, New York, NY 10013-2473, USA

www.cambridge.org
Information on this title: www.cambridge.org/9780521876612

© Roger D. Blair 2012

This publication is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without the written
permission of Cambridge University Press.

First published 2012

Printed in the United States of America

A catalog record for this publication is available from the British Library.

Library of Congress Cataloging in Publication data

Blair, Roger D.
Sports economics / Roger D. Blair.
p. cm.
Includes bibliographical references and index.
ISBN 978-0-521-87661-2 (hardback)
1. Sports – Economic aspects. 2. Professional sports – Economic aspects. I. Title.
GV716.B53 2011
796.06'91–dc23 2011025092

ISBN 978-0-521-87661-2 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for
external or third-party internet web sites referred to in this publication and does not guarantee that
any content on such web sites is, or will remain, accurate or appropriate.

Cover photo: Sarah Goldberger

MLB's second revenue sharing program involves the distribution of money from the Central Fund, which collects revenue from various sources such as the national broadcast contract. These funds are distributed disproportionately based on a club's relative revenue position. This is also designed to help teams in weaker markets.

Box 3.1 *A Revenue Sharing Example*

As an example, suppose that the revenue sharing plan is a 10-team league requiring each team to contribute 25 percent of its revenue to the league, which returns .25 percent of the total collected to each team. The effect on net revenue after sharing is as follows:

Team	Revenue	Net Revenue
1	$50 million	51.5625
2	$40 million	44.0625
3	$30 million	36.5625
4	$20 million	29.0625
5	$20 million	29.0625
6	$20 million	29.0625
7	$15 million	25.3125
8	$15 million	25.3125
9	$10 million	21.5625
10	$5 million	17.8125

6 SPORTS LEAGUES, MONOPOLY POWER, AND CONSUMER WELFARE

Sports leagues have been characterized as monopolies, that is, the sole producer of a certain sport. For example, MLB is the only seller of major league baseball games and is therefore a monopolist. This is not to say that there are no substitutes for MLB games. In fact, there are many *imperfect* substitutes. There are minor league, college, and high school baseball games. There are other major league sports as well as a wide array of other ways for a fan to spend his or her discretionary income – movies, concerts, vacations, recreation, and dining out to name just a few. However, if a fan wants to see an MLB game in St. Louis, he or she will watch the Cardinals play the visiting team. The Cardinals have a local monopoly in supplying MLB action in St. Louis. Subject to the competition provided by imperfect substitutes, the Cardinals will exploit their local monopoly to maximize their profits.

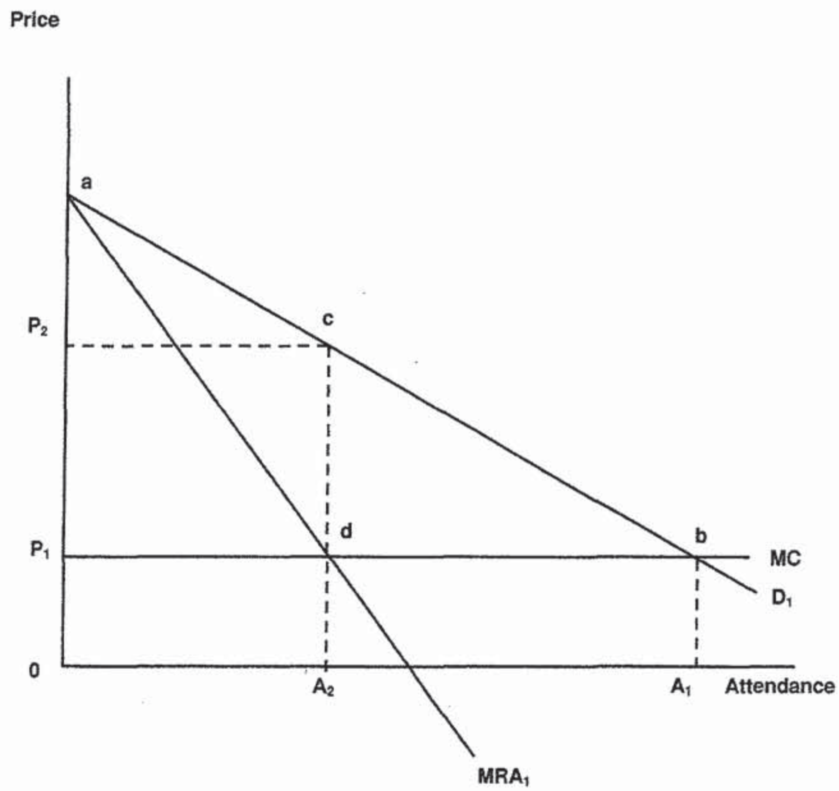


Figure 3.2. To maximize profits, the Cardinals will sell A_2 tickets at a price of P_2. This results in a social welfare loss equal to area *cdb*.

Monopoly power is the ability of a seller to raise prices above the competitive level without losing enough sales that the price increase is unprofitable.[14] Those higher prices are a symptom of what really concerns economists: social welfare losses. Economists object to monopoly because it leads to underproduction of the output and a consequent misallocation of scarce resources. In Figure 3.2, for example, let D_1 be the demand for tickets to a Cardinals game. If the marginal cost of fan attendance is *MC*, then the competitive price will be P_1, which equals MC_1 and A_1 fans will attend the game. Every fan who is willing to pay a price equal to or greater than the cost to society of his or her attendance will be able to attend.

Consumer surplus is the difference between the fan's willingness to pay and the price that is actually paid. In this competitive price case, consumer surplus is equal to the triangular area abP_1. This is as good as it can get – that is, consumer surplus cannot be any larger without imposing losses on the Cardinals. In St. Louis, however, the Cardinals have a local monopoly on MLB games.

[14] This, of course, requires that those substitutes that exist cannot be very close; otherwise consumers would simply buy the cheaper alternative.

Table 4.2. Herfindahl-Hirschman Index – Major League Championships, 1980–2009

League	Herfindahl-Hirschman Index*
Major League Baseball	749
American League	1272
National League	1177
National Football League	884
National Basketball Association	1822
National Hockey League	1058

* $HHI = \sum_{i=1}^{n} s_i^2(10{,}000)$.

3.2 Herfindahl-Hirschman Index

The Herfindahl-Hirschman Index (*HHI*) is a well-known measure of industrial concentration. It is used primarily to evaluate the competitiveness of industries for antitrust purposes.[9] The *HHI* is the sum of the squared market shares:

$$HHI = \sum_{i=1}^{n} s_i^2,$$

where s_i is the share of firm i and n is the number of firms. If there is pure monopoly, the *HHI* equals 1; if there is pure competition, the *HHI* will be close to zero. To avoid a lot of messy decimals, the antitrust authorities have modified the *HHI*. It is now customary to multiply the squared market shares by 10,000. For example, a share of 0.05 when squared is 0.0025, but when multiplied by 10,000, it becomes 25. In what follows, we will adopt this convention. Now, the *HHI* for a pure monopoly is 10,000 and again approaches zero for competitive industries.

When the *HHI* is applied to competitive balance, we usually look at the concentration of championships over time. Table 4.2 shows the *HHI* for each of the major professional sports leagues over the 1980–2009 period. For the 1980–2009 period, there were 30 championships. Consequently, s_i, which is team i's share of these championships, will be equal to the number of championships won by team i divided by 30. Each team's share was squared and multiplied by 10,000. To calculate the HHIs displayed in Table 4.2, these team figures were then summed. The *HHI* for the NBA was the highest among the four major sports leagues at 1822. The lowest *HHI* was for MLB's World Series at 749. The next highest was for the NFL's Super Bowl. The NHL's Stanley Cup concentration was next. To put these entries in perspective, the Department of Justice and the Federal Trade Commission consider an industry to be unconcentrated

[9] The index gained widespread attention because of its use by the antitrust agencies. See 2010 Department of Justice and Federal Trade Commission Merger Guidelines, available at www.doj.gov.

if the *HHI* is below 1,500. It generally considers such markets to be competitive. When the *HHI* exceeds 2,500, a market is deemed to be "highly concentrated." Values of the *HHI* between 1,500 and 2,500 signify "moderate" concentration.

Over the 1980–2009 period, MLB's World Series was unconcentrated with an *HHI* of only 749. Because there were 30 World Series, the lowest possible value of the *HHI* would be 333, which would require a different winner every year. If we had a different winner every year, each winner's share would be 1/30 or 0.033. Squaring this and multiplying by 10,000 yields 11.1 for team 1. Multiplying this by the number of winners (30) provides an *HHI* of 333. The American League and National League Championships were somewhat more concentrated with HHIs of 1,272 and 1,213, respectively.

For the NFL's Super Bowl, the *HHI* was 884, which put it in the unconcentrated category. The NHL's Stanley Cup was similarly unconcentrated with an *HHI* of 1,056. The highest *HHI* value went to the NBA. Its championships were in the moderately concentrated range with an *HHI* of 1,822.

None of the four major sports leagues had complete competitive balance because there were repeat winners. There were fewer in baseball than in any of the others. There were more repeats in basketball. The NFL and the NHL are in between MLB and the NBA. Precisely how we should interpret these results is not clear, but the *HHI* values do not suggest undue concentration in any of them except perhaps basketball.

3.3 A Caveat on Statistical Measures

We have described and illustrated two summary statistics that are meant to capture competitive balance. This concept, however, is complicated and not fully amenable to measurement by a single statistic.[10]

4 ECONOMIC ANALYSIS OF COMPETITIVE BALANCE

From an economic perspective, competitive *imbalance* is easy to understand: wins are worth more in some cities than in others.[11] In other words, the willingness of fans to pay for wins is higher in some cities than in others. Once we recognize that fact, we can appreciate the inevitability of competitive imbalance.[12] In this section, we will formalize this idea and explore some efforts at improving competitive balance.

4.1 Free Agency

Initially, we assume that there is complete, unfettered free agency for the players. In other words, every player is free to play for any club that will hire him or

[10] There are other proposed measures. For example, see Brad R. Humphreys, "Alternative Measures of Competitive Balance in Sports Leagues," *Journal of Sports Economics*, 3, 133–148.

[11] This section depends on the insights of Simon Rottenberg, (1956), "The Baseball Players Labor Market," *Journal of Political Economy*, 64, 242–258. Also, see Quirk and Fort, *supra* note 3, at pp. 240–294.

[12] This insight can be traced to the seminal insights of Simon Rottenberg (1956), "The Baseball Players' Labor Market," *Journal of Political Economy*, 64, 253–256.

In contrast, if marginal cost were above MC^* at the point where $MR_1 = MR_2$, both teams would want to reduce their winning records because marginal cost would then exceed MR_1 and MR_2 at $w_1 = .600$ and $w_2 = .400$. To remain employed, player salaries would have to fall and marginal cost would sink back to MC^*.

5 DEALING WITH COMPETITIVE IMBALANCE

Various rules and procedures have been proposed for dealing with competitive imbalance. Most of them do not work because they cannot offset market forces. This is the invariance principle that Rottenberg explained: no matter what we try to do, profit maximization will result in players going to teams where they are highly valued. In this section, we consider the reserve clause, revenue sharing, salary caps, and luxury taxes as means of improving competitive balance.

5.1 Reserve Clause

The reserve clause was a contractual device that prevented players from moving to another team.[14] In the late 1800s, baseball's National League began to incorporate the reserve clause in its standard player contracts. This clause provided that

> It is further understood and agreed that the club shall have the right to "reserve" the said player for the season next ensuing provided that the player shall not be reserved at a salary less than that being paid in the current season.

At the end of one season, the player was bound to his present team for the following season. To play during that second season, the player had to sign a contract for that year. Because the new contract also contained a reserve clause, the player was tied to that team for a third season. This continued indefinitely until the team no longer wanted the player's services. At that time, the player's contract could be sold for cash or traded for the contract of another player. In the event that the player was washed up – that is, could no longer perform at the MLB level – he would simply be released. Gerald Scully has observed that the reserve clause conferred "essentially an indefinite property right in the player's service that was exclusive to the club holding the contract."[15] This bundle of property rights could be sold to another club. If the Dodgers sold a player's contract to the Phillies, then the player had two choices: he could move to Philadelphia, or he could retire. Once he was under contract to the Phillies, he would be bound to them until they no longer wanted his services.

Teams have long argued that the reserve clause was designed to help teams achieve financial stability, which would contribute to competitive balance. If a team in a weak market acquired the rights to a great player, it could keep him

[14] Quirk and Fort, *supra* note 3, at pp. 179–208, provide a good historical account of the rise and fall of the reserve clause.

[15] Gerald Scully (1995), *The Market Structure of Sports*, Chicago: University of Chicago Press, at p. 12.

without incurring much cost. In the first place, the player could not play for anyone else unless his contract was sold or traded. Moreover, the reserve clause prevented a competitive offer, and therefore, the team need not pay full market value to the player. However, just because teams could afford to keep premiere players did not mean that they would do so. After all, the teams are interested in having the team quality that maximizes profit.

If the teams are free to sell players for cash, the reserve system will result in the same distribution of talent and therefore the same records as with free agency. We can see this in Figure 4.2. Consider the case in which each team has a .500 record. At that point, MR_1 exceeds MR_2. It will be optimal for team 2 to sell players to team 1 and for team 1 to buy players from team 2. The quality of team 2 will fall and it will lose more games. The quality of team 1 will rise and it will win more games. The selling of players will stop when equilibrium is restored. Thus, w_1 will rise to .600 and w_2 will fall to .400. The normal forces of economics dictate that we will observe competitive imbalance because imbalance is more profitable than balance.

Each player is an asset to the team that has him under contract. If a player on team 2 is worth more to team 1 than to team 2, the player's contract will be sold to team 1. In a free market, assets flow to their highest valued use because it is economically rational for them to do so. Both teams are better off financially. Of course, the result on the field is quite different: one team improves at the expense of the other team. With respect to competitive balance, the simple reality is that a player reservation system has no effect on competitive balance in a league that permits cash sales of players' contracts.

There are several economic implications of the reserve clause. First, wealth is transferred from the players to the owners because the owners have the property rights. Suppose a player could earn $100,000 as a real estate salesman if he were not playing professional baseball. If this is his next best alternative, this establishes his minimum salary as a baseball player. Suppose that he is currently playing for the Braves where his talents are worth $1.5 million. If he were playing for the Cubs, his talent would be worth $1.9 million. Under the reserve system, the Braves would have to pay him at least $100,000 or he would quit playing baseball. If he were being paid $100,000, the Braves would earn a profit of $1.4 million by keeping him under contract. If the Cubs were to buy his contract for $1.7 million, the Braves would reap additional profits of $300,000. The Cubs must pay the player $100,000, but would still come out ahead by $100,000: $1.7 million to the Braves plus $100,000 to the player equals $1.8 million for a player worth $1.9 million to the Cubs. The teams split up the $1.8 million surplus generated by the player.

Compare this to free agency. With free agency, the player can sign with either the Braves or the Cubs. Because the Braves will pay up to $1.5 million, the Cubs must pay at least that amount. The Cubs will not pay more than $1.9 million. Ultimately, the player will sign with the Cubs for an amount between $1.5 and $1.9 million, say, $1.7 million. In this case, the player gets most of the surplus while the Cubs get a little and the Braves get nothing. Thus, the reserve system distributes wealth away from the player and to the clubs.

A second implication of the reserve system is that income is transferred from the strong-market teams to the weak-market teams, which will improve financial stability, but not competitive balance.

Box 4.1 *Can the Yankees Buy Success?*

The answer to this question is not as clear as one might suppose because it depends on what we mean by "success." In the 1998–2010 period, the Yankees won the most games during the regular season 7 out of 13 times while spending 1.7 to 3.2 times the American League average on their payroll.

During this period, the Yankees won six American League championships and four World Series Championships.

This may not seem like a sufficient return on the payroll expenditures (see Table 4.4), but *Forbes* found that the Yankees franchise was worth considerably more than any other MLB club.

5.2 Revenue Sharing

Teams in strong markets have more revenue than teams in weak markets. As a result, revenue sharing can help the teams in weak markets and enable them to be more competitive in the market for player talent. We would expect that, with better talent, the weak-market teams will improve, and competitive balance will likewise be improved. However, as we will see, this is a myth because teams will still choose the quality level that maximizes profits.

Let us consider sharing gate receipts. Suppose the home team gets a fraction α and the visiting team gets $(1-\alpha)$ of the gate receipts where $0.5 < \alpha < 1.0$. For example, in the NFL, gate receipts were split 60–40, so $\alpha = 0.6$ and $(1-\alpha) = 0.4$. When team 1 increases its winning percentage, it increases its revenue but only gets to keep α of the increase. At the same time, when it increases its winning percentage, team 2's winning percentage falls. This decreases team 2's revenue and team 1 absorbs $(1-\alpha)$ of that decrease in revenue. Thus, team 1's total revenue with revenue sharing (TR_1^*) is:

$$TR_1^* = \alpha TR_1 + (1-\alpha) TR_2,$$

where TR_1 and TR_2 are total revenues without revenue sharing for teams 1 and 2, respectively. Now, consider what happens when team 1 increases its winning percentage. The impact on TR_1^* has two components:

$$MR_2^* = \alpha MR_1 - (1-\alpha) MR_2.$$

As w_1 increases, TR_1 increases, and team 1 gets to keep α of that increase. This is the first term on the right-hand side, αMR_1. However, when w_1 rises, w_2 falls, which causes TR_2 to decrease. Because of revenue sharing, team 1 must absorb $(1-\alpha)$ of that decrease. This is the second term on the right-hand side, $-(1-\alpha)MR_2$. Because the change in w_2 is negative, $(1-\alpha)MR_2$ is deducted from αMR_1 to determine the net effect of increasing w_1.

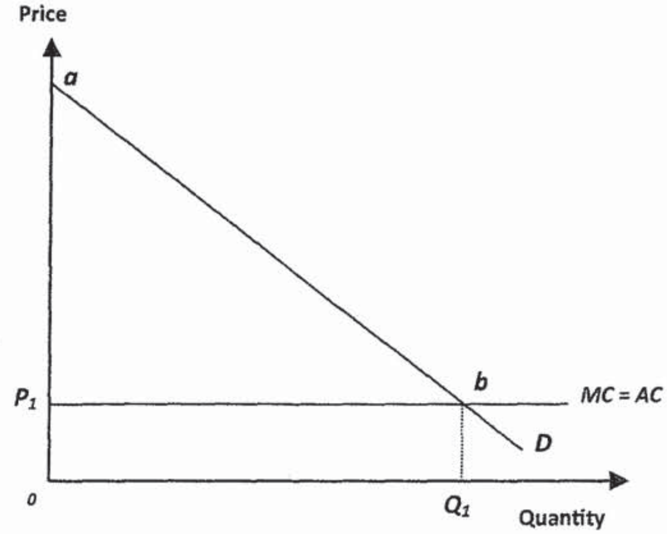


Figure 5.1. Competitive pricing of tickets results in price equal to marginal cost: $P_1 = MC$. With competitive pricing, consumer surplus is equal to area abP_1. Because $P_1 = AC$, the organizer earns no excess profit.

The spectators, however, enjoy substantial consumer surplus. The demand shows their willingness to pay for tickets while the price shows what they must pay in the market. The difference between the two is consumer surplus. As a general matter, *consumer surplus* is the difference between the maximum amount that consumers are willing to pay and the amount that the market forces them to pay. In Figure 5.1, consumer surplus is the area under the demand curve and above the marginal cost curve. In this case, consumer surplus equals the triangular area abP_1. Competition in this market leads to the maximum consumer surplus. Any smaller output will reduce consumer surplus. An output larger than Q_1 will not occur because price would then have to be below cost and firms will never want to sell at below-cost prices. As we will see, there are ways that an event organizer with market power can extract some of this consumer surplus and thereby turn it into profit for himself.

3 SIMPLE MONOPOLY PRICING

There is no doubt that Jerry Jones, the owner of the Dallas Cowboys, knows that he provides the only NFL game in Dallas. The USTA knows that it is the only supplier of the U.S. Open Tennis Championship in New York City every year. If you want to watch an NBA game in Chicago, you go to a Bulls game. These owners and organizers have market power (or monopoly power) because they can control the number of tickets available (up to the maximum seating capacity, of course). They can extract some consumer surplus through simple monopoly pricing.

8

Insuring Player Talent

1 TALENT: A RISKY ASSET

Player talent is a valuable asset that is put at risk every time athletes play or practice. Some injuries – even if relatively severe – can be overcome. There are numerous examples of football players who have overcome serious knee and shoulder injuries. Willis McGahee, for example, suffered a devastating knee injury during the 2003 Fiesta Bowl game while playing for the University of Miami. The Buffalo Bills took a huge chance by drafting him in the first round of that year's National Football League (NFL) draft. McGahee sat out his entire rookie year rehabbing his knee, while earning $1.8 million. He recovered from the injury and rushed for 1,128 yards and 13 touchdowns in 2004. Dan Marino, the great Miami Dolphins quarterback, played for years after having torn his Achilles tendon. Tommy John was an ace of the Los Angeles Dodgers pitching staff for years after elbow surgery.[1] Sometimes, however, injuries can end a career. In some sports – golf, tennis, cycling, track, and professional football – the athlete is out of luck if he or she suffers a career-ending injury because incomes are not guaranteed. In other sports, notably baseball and basketball, professional contracts are guaranteed, which means that the athlete gets paid even if he or she cannot perform. A career-ending injury does not void the contract or lead to a financial disaster for the player, but the financial loss does fall on the team, which must pay both the athlete who can no longer play and his replacement.

The value of athletic talent is a risky asset. Who bears that risk depends on the contract. For example, Carl Pavano signed a four-year contract with the New York Yankees in 2005. The contract was reported to be worth $39.95 million. Pavano developed shoulder problems in his first year (2005) and could not pitch after June 27. Pavano worked to rehab his shoulder but developed back, buttocks, and elbow problems. To make matters worse, he was in a car accident and cracked some ribs. He did not pitch at all for the Yankees in 2006

[1] That surgical procedure, which involved transplanting a tendon from the forearm to the elbow, is now known as "Tommy John surgery."

but remained optimistic about his health in 2007. In 2007, Pavano developed further problems. After just two starts, he went on the disabled list and was scheduled for Tommy John surgery. This ended 2007 for him as well as most of 2008 because of the prolonged rehab that such surgery requires. Before his injury in 2005, Pavano won four games while pitching 100 innings. The Yankees paid him some $17 million for the 2005 and 2006 seasons, which works out to $4.3 million per win or $170,000 per inning. If Pavano had not regained his physical abilities, the Yankees would still have had to pay for the remaining two years on his contract.[2] That is, the risk of a career-ending injury falls squarely on the team in Major League Baseball (MLB). When contracts are not guaranteed, as is generally the case in the NFL, the risk of a career-ending injury falls on the player's shoulders. This, of course, is true for all amateur athletes as well. If a college player is injured, the expected value of his future professional compensation is lost.

For teams and players, insurance is a way of shifting the risk to someone else. In this chapter, we examine the demand for insurance – that is, the demand for shifting risk to someone else. Along the way, we develop a simple model of decision making in the face of uncertainty. This economic model will prove useful in Chapters 10 through 13 as well. We also examine the insurance program authorized by the National Collegiate Athletic Association (NCAA) as well as the insurance coverage available to professional teams.

RISK AVERSION AND INSURANCE

If a person is risk averse, he or she does not like risk and is willing to pay someone else to bear it. How much one is willing to pay depends on how risk averse the person is. A simple model of decision making under uncertainty will clarify this concept.

Expected Utility Model

A model that describes optimal decisions in the presence of uncertainty must account for various attitudes toward risk. For example, suppose an individual is faced with a choice between two risky prospects. Prospect 1 involves a payment of $100 with probability 0.5 or a payment of $300 with probability 0.5. Prospect 2 involves a payment of $50 or $350 with equal probabilities. The expected value of each prospect is $200:

$$\text{Prospect } 1{:}(.5)(100) + (.5)(300) = 50 + 150 = 200$$

$$\text{Prospect } 2{:}(.5)(50) + (.5)(350) = 25 + 175 = 200$$

Some individuals will be indifferent between prospects 1 and 2, whereas others would prefer one or the other. We need a decision model that can

[2] As it turned out, Pavano returned in late August 2008. Thus, the Yankees got almost one full season out of Pavano for nearly $40 million. Following 2008, Pavano became a free agent and signed with the Cleveland Indians for a modest (by Major League Baseball standards) amount.

This material may be protected by Copyright law (Title 17 U.S. Code)

17

Salary Determination: Competition and Monopsony

1 INTRODUCTION

The average salary in major league sports is substantial to say the least. For the 2010 season, the average salary in Major League Baseball (MLB) was $3.33 million and was $1.87 million in the National Football League (NFL). In the National Basketball Association (NBA), the average salary was $4.58 million, and it was $2.4 million in the National Hockey League (NHL). The salaries of the superstars were even more astonishing:

Alex Rodriguez (MLB)	$33.0 million
Kobe Bryant (NBA)	$24.8 million
Peyton Manning (NFL)	$15.0 million
Roberto Luongo (NHL)	$10.0 million

Even die-hard sports fans often wonder aloud how someone can be worth so much money for playing a game.[1] The answer, of course, is supply and demand. At the highest levels, there are very few athletes, but there is a substantial demand for their talents because of the popularity of pro sports as a form of entertainment. The salaries of the 10 highest-paid players in each major league sport for the 2010 season are shown in Table 17.1.

In this chapter, we examine the determinants of player salaries. We will also take a look at how the major leagues have tried to exercise buying power to keep salaries down. Some empirical evidence of their success in doing so will be examined as well.

[1] It is not just the players who are earning huge salaries. For 2003, Bud Selig earned $11.6 million as commissioner of MLB. In his last year as NFL commissioner, Paul Tagliabue earned more than $10.3 million. Some union executives do quite well, too. Gene Upshaw, for example, earned more than $6 million in 2006 as head of the NFLPA. Coaches are also paid handsomely.

Table 17.1. Top 10 Salaries

Major League Baseball (2010)	
1. Alex Rodriguez	$33,000,000
2. CC Sabathia	$24,285,714
3. Derek Jeter	$22,600,000
4. Mark Teixeira	$20,625,000
5. Johan Santana	$20,144,708
6. Miguel Cabrera	$20,000,000
7. Carlos Beltran	$19,401,571
8. Ryan Howard	$19,000,000
9. Carlos Lee	$19,000,000
10. Alfonso Soriano	$19,000,000
National Basketball Association (2010)	
1. Kobe Bryant	$24,800,000
2. Rashard Lewis	$20,500,000
3. Kevin Garnett	$18,800,000
4. Tim Duncan	$18,700,000
5. Michael Redd	$18,300,000
6. Pau Gasol	$17,800,000
7. Andrei Kirilenko	$17,800,000
8. Gilbert Arenas	$17,700,000
9. Yao Ming	$17,700,000
10. Zach Randolph	$17,300,000
Source: www.forbes.com.	
National Football League (2010)	
1. Peyton Manning	$15,800,000
2. Nnamdi Asomugha	$14,300,000
3. Donovan McNabb	$11,500,000
4. Champ Bailer	$9,500,000
5. Sam Bradford	$8,300,000
6. Ndamukong Suh	$8,000,000
7. Elvis Dumervil	$7,200,000
8. Julius Peppers	$7,000,000
9. Matthew Stafford	$6,900,000
10. Gerald McCoy	$6,600,000
Source: www.forbes.com.	
National Hockey League (2010–2011 Season)	
1. Roberto Luongo	$10,000,000
2. Vincent Lecavalier	$10,000,000
3. Sidney Crosby	$9,000,000
4. Evgeni Malkin	$9,000,000
5. Alexander Ovechkin	$9,000,000
6. Chris Drury	$8,000,000
7. Scott Gomez	$8,000,000
8. Dany Heatley	$8,000,000
9. Duncan Keith	$8,000,000
10. Jason Spezza	$8,000,000
Source: www.forbes.com.	

2 DEMAND FOR ATHLETIC TALENT

We begin our analysis of the sports labor market by assuming that it is competitively structured. For the most part, however, sports labor markets are not competitive. Nonetheless, the competitive model provides a useful benchmark for comparison with the actual results. In addition, it introduces a way of measuring a player's value to his club.

Athletes are employees of their respective clubs, which are business firms that produce athletic competition that is sold to the fans. We begin our analysis with the principles that drive the employment decisions of profit-maximizing firms. In general, labor is an input in the production process. No one demands labor services for their own sake. Instead, labor is demanded because it can be used to produce something that the employer can sell. Consequently, the demand for labor is a *derived* demand – it is derived from the demand for the output that the labor is used to produce. In the sports business, players, coaches, and managers are employed by their clubs to produce athletic competition, which is what the clubs sell to the fans. The demand for athletic talent is derived from the fans' demand for watching the games that the athletes play.

The production function of the firm tells us the maximum quantity of output that can be produced for any given combination of inputs. In the simplest case, the firm's output may be a function of the labor and capital employed. For that case, we may suppose that the firm's production function can be written generally as

$$Q = Q(L, K),$$

where Q is output, L is labor, K is capital, and $Q(\cdot)$ is the production function – or the technology – that converts inputs into outputs. In the short run, we may assume that capital is fixed at $\overline{K}$ whereas labor is variable. Consequently, changes in output are made by changing the amount of labor that is combined with the fixed quantity of capital. As usual, the firm's profit is the difference between total revenue and total cost. By incorporating the production function explicitly, the firm's short-run profit function can then be written as

$$\Pi = P(Q)\,Q(L, \overline{K}) - wL - r\overline{K},$$

where π is profit, $P(Q)$ is the demand function, and w and r are the input prices. In this formulation, the firm's decision variable is the quantity of labor. Because capital is fixed, the decision on how much labor to employ determines the quantity of output and therefore the total revenue. It also determines the expenditures on labor and thereby determines the total variable costs. The fixed cost, $r\overline{K}$, has already been determined.

To maximize profits, the firm will expand its employment of labor until the increment in profit vanishes. In other words, as long as an increase in the quantity of labor employed increases profit, the firm will continue to expand

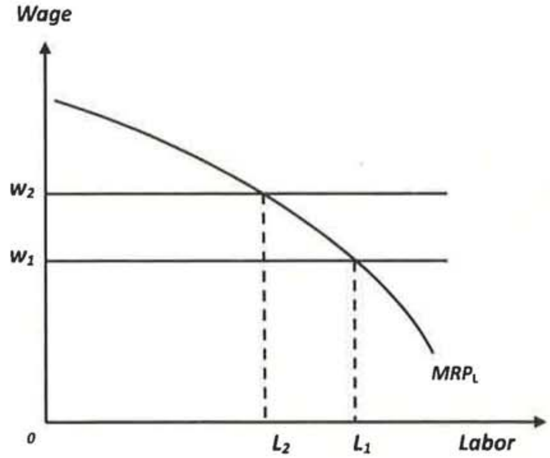


Figure 17.1. The firm's demand curve for labor is the marginal revenue product curve (MRP_L).

employment. This expansion stops when there is no further increase in profit. Specifically, profit maximization requires that

$$\frac{\Delta \Pi}{\Delta L} = \frac{\Delta PQ}{\Delta Q} \times \frac{\Delta Q}{\Delta L} - w = 0.$$

Because $\frac{\Delta PQ}{\Delta Q}$ is marginal revenue and $\frac{\Delta Q}{\Delta L}$ is the marginal product of labor (MP_L), profit maximization requires that

$$MR \cdot MP_L = w.$$

This makes sense from an economic perspective. When the firm increases employment slightly, output will increase by the marginal product of labor. The monetary value of that increased output is determined by the marginal revenue generated by the sale of that increment in output. The product of MR and MP_L gives us the marginal benefit of the increase in employment, which we usually refer to as the *marginal revenue product*. The marginal cost of the increase in labor is the wage (w) that must be paid. Thus, employment is expanded until the marginal benefit of doing so equals the marginal cost of doing so.[2]

For convenience, we write $MR \cdot MP_L$ as MRP_L and call it the marginal revenue product of labor. The MRP_L is the firm's demand curve for labor given the fixed quantity of capital ($\overline{K}$). For example, in Figure 17.1, the firm will demand L_1 units of labor services at a wage rate of w_1. If the wage were to rise to w_2, the quantity of labor services demanded would fall to L_2. This exercise can be repeated for other values of w. From this, we can see that the firm's MRP_L curve constitutes its demand for labor. At any wage, the quantity of labor demanded is found on the MRP_L curve.

[2] This condition for profit maximization can be rearranged into a more familiar expression:

$$MR = w/MP_L,$$

when we recognize that w/MP_L is the marginal cost.

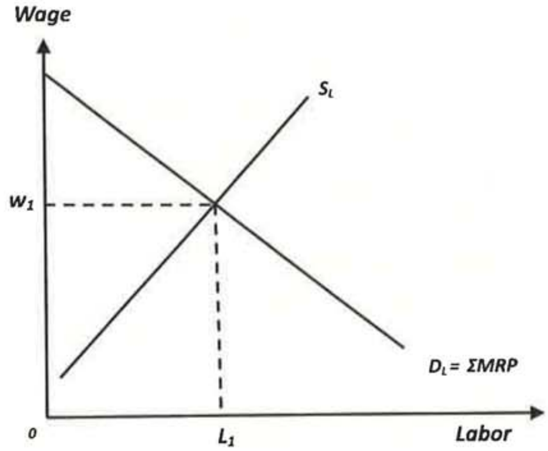


Figure 17.2. Equilibrium in the competitive labor market requires the equality of supply (*S*) and demand (*D*).

A professional team's focus on marginal revenue product is illustrated by the Cincinnati Reds' assessment of Ken Griffey, Jr.'s presence in 2000.[3] The team expected to gain $20 million in new revenues due to his presence in the lineup. Attendance rose by some 500,000 fans during the 2000 season, which translated into $16 million in additional gate receipts and concession revenues. Merchandise sales rose another $1.9 million. Arguably, Griffey's MRP was nearly $18 million, which was less than the Reds had hoped for but more than Griffey was paid, which was $7 million.

2.1 Market Demand for Labor

The market demand for labor is found by summing the demands of the individual firms. This is the usual horizontal summation: for each wage, find the amount of labor that each employer wants to hire and sum these quantities. This wage and total quantity demanded are the coordinates of one point on the market demand curve. The process can be repeated for other values of w to trace out the market demand curve.

2.2 Equilibrium Wage

The equilibrium wage is found at the intersection of supply and demand. In Figure 17.2, the equilibrium wage is w_1, and total employment by all firms is L_1. The market clears because supply and demand are equal at that wage; everyone who is willing to work for w_1 is employed. Note that the wage equals the marginal revenue product for all employers. In other words, in equilibrium every firm operates where $MRP_L = w$. This, of course, means that $MRP_L^1 = MRP_L^2 = \& = MRP_L^n = w$.

That is, the marginal revenue product of labor is the same across all firms.

[3] John Rofe, "'Griffey Factor' Revenue Wasn't as Big as Forecast," *Sports Business Journal*, October 2, 2000, p. 3.

2.3 Numerical Example

Suppose that the supply of linebackers can be expressed as

$$w = \$100{,}000 + 5{,}000L,$$

where w is the wage and L is the number of linebackers. The marginal revenue product of linebackers – the demand – is as follows:

$$MRP_L = \$1{,}000{,}000 - 4{,}000L.$$

The equilibrium number of linebackers employed is found where supply and demand are equal. Accordingly, we have

$$\$100{,}000 + 5{,}000L = \$1{,}000{,}000 - 4{,}000L.$$

Solving for L, we find that there will be 100 linebackers employed. The wage can be found by substituting $L = 100$ into either the supply or the demand:

$$\$100{,}000 + 5{,}000(100) = \$600{,}000,$$

or,

$$\$1{,}000{,}000 - 4{,}000(100) = \$600{,}000.$$

Either way, the equilibrium wage is $600,000.

3 MONOPSONY IN THE LABOR MARKET

At times, sports teams and leagues may exercise *monopsony* power, that is, power on the buying side, in the sports labor market. Before examining specific instances of monopsony, we will develop the basic economic model of monopsony to understand the economic consequences of this market structure.

If a firm is the only purchaser of an input, it is a monopsonist by definition. If, in addition, the supply of that input is positively sloped, the monopsonist will enjoy monopsony power, which is the power to depress the price paid below the competitive level.[4] Now the monopsonist does not force prices down through heavy-handed, abusive practices. As we shall see, a monopsonist simply reduces its purchases and thereby slides down the supply curve to a lower price.

In the preceding section, we found that the profit-maximizing employment level required that the firm's marginal revenue product of labor be equal to the wage: $MRP_L = w$. In that case, however, the wage was constant and equal to the competitive wage. For a monopsonist, the marginal cost of an additional unit of labor will exceed the wage paid because an increase in employment leads to an increase in the wage. This can be seen clearly in Figure 17.3

The supply of labor (S) is positively sloped and, as a result, when employment rises from L_1 to $L_1 + 1$, the wage must rise from L_1 to L_2 to induce the

[4] This is the flip side of monopoly power, which is the ability to take the output price above the competitive level.

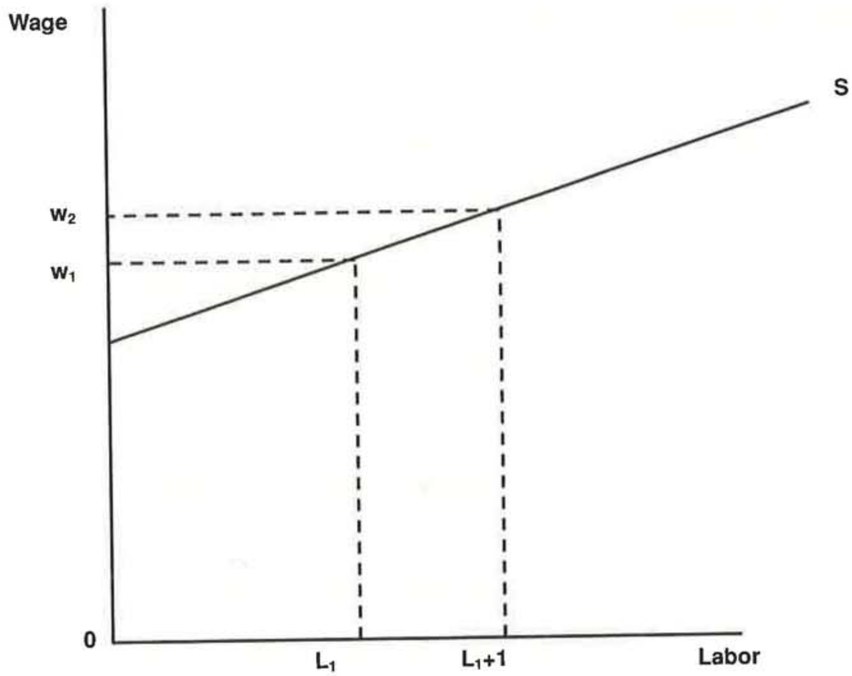


Figure 17.3. When a monopsonist adds a unit of labor (L_1 to $L_1 + 1$), the wage rises from w_1 to w_2. All workers receive the higher wage. The wage bill rises from $w_1 L_1$ to $w_2(L_1 + 1)$.

provision of that increment in labor. If the monopsonist cannot discriminate, all labor will command the higher wage. The firm's total wage bill rises from $w_1 L$ to $w_2(L_1 + 1)$. The difference can be decomposed to reveal the marginal cost of expanded employment. First, adding one unit requires paying w_2 for that unit. Second, the original L_1 units now must be paid w_2, so there is an increase of $(w_2 - w_1)L_1$ in the wage bill. Thus, expansion leads to a change in the wage bill of $w_2 + (\Delta w/\Delta L)L_1$ where $\Delta w/\Delta L$ is the change in the wage brought about by the expanded employment. This impact is called the marginal factor cost (MFC):

$$MFC = w + (\Delta w/\Delta L)L.$$

Because $\Delta w/\Delta L$ is positive, the MRC exceeds the wage. As a result, MFC lies above S in Figure 17.4.

To maximize its profits, the monopsonist will expand its employment of labor until the marginal benefit equals the marginal cost. That is, the monopsonist will operate where the MRP_L is equal to the MFC. Because the marginal factor cost exceeds the wage, the monopsonist will find it profitable to reduce employment below the point where MRP_L equals w.

These observations can be seen in Figure 17.4 where MRP_L is the demand for labor, S is the supply of labor, and MFC is the associated marginal factor

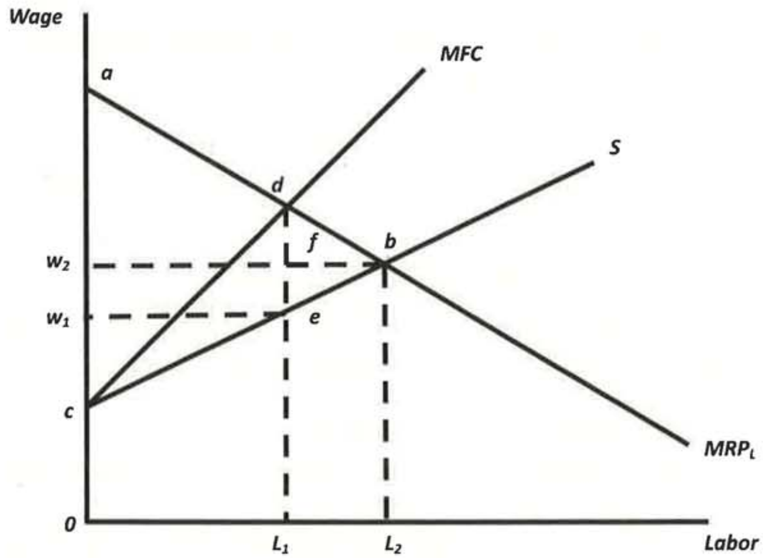


Figure 17.4. Monopsony leads to a reduction in employment and a loss in social welfare.

cost.[5] The firm maximizes profit by employing L_1, which is determined by the equality of MRP_L and MFC. The wage that the monopsonist pays is determined by the height of the supply curve at L_1, which is shown as w_1. As is plain to see, the marginal revenue product exceeds the wage at the firm's optimum. It is *privately* optimal for the firm to employ labor at a quantity where the marginal value to the firm exceeds the wage that it pays.[6] This is necessary to maximize the profits of the firm, but this employment level is not *socially* optimal.

3.1 Social Welfare Loss of Monopsony

The exercise of monopsony power leads to a deadweight social welfare loss, which is analogous to that associated with monopoly.[7] Because the monopsonist operates where the MRP_L equals the MFC rather than where the MRP_L equals the supply, the employment level is allocatively inefficient. The social cost of employing another unit of L is given by the height of the supply curve, and the value to society of the added output that would have been produced is given by the height of the demand for labor (i.e., the height of MRP_L). At L_1, the added social value exceeds the added social cost. From a *social welfare*

[5] For a linear supply curve, the marginal factor cost has the same intercept on the wage axis and is twice as steep as the supply. For example, if $w = a + bL$, then $wL = aL + bL^2$. A small change in L is then $\Delta wL/\Delta L = a + 2bL$; thus, the slope of MFC is 2b, and the slope of S is b.

[6] The excess MRP over w gave rise to charges of "monopsonistic exploitation"; see Joan Robinson, *The Economics of Imperfect Competition*, London: Macmillan (1933) at p. 281. This concept of exploitation has been employed in analyses of sports labor markets as we will see later in the chapter.

[7] For a compact statement of the welfare effects, see George J. Stigler (1987), *The Theory of Price*, 4th ed., New York: Macmillan, at pp. 216–218.

perspective, then, the employment of labor should expand beyond L_1. In fact, social welfare would be maximized at an employment level of L_2, which would call for a wage of w_2. However, the monopsonist finds it *privately* optimal to employ L_1 because this maximizes its profits.

We can identify the social welfare loss due to monopsony in Figure 17.4. The competitive outcome – $w = w_2$ and $L = L_2$ – yields a surplus equal to the triangular area *abc*. Part of this is profit (or buyer surplus): area abw_2. The rest is producer surplus: area w_2bc. Monopsony leads to a reduction in employment from L_2 to L_1 and a reduction in the wage paid from w_2 to w_1. This reduces the surplus to area *adec*, but it alters the distribution of the surplus as well. Area w_2few_1 had been producer surplus but is now profit to the buyer. Because this area exceeds the loss in profits due to the reduced employment of labor, area *dbf*, the buyer is better off at the expense of the suppliers. Usually, these distributional consequences are of no concern regarding social welfare.[8] However, the allocative inefficiency of the monopsony solution can be seen as the triangular area *dbe* in Figure 17.4. This area represents a loss in profit (buyer surplus) and producer surplus, which no one receives. It results from the allocative inefficiency of monopsony: too few units of labor are being allocated to the production of the monopsonist's output.

3.2 Numerical Example

Suppose that the supply of *NFL* quality quarterbacks is given by

$$w = \$1{,}000{,}000 + 600{,}000(QB),$$

where w is the wage and QB is the number of quarterbacks. The marginal revenue product of such quarterbacks is

$$MRP = \$10{,}000{,}000 - 300{,}000(QB).$$

If the market were competitive, the wage and employment level would be determined by the equality of supply and demand (which is the marginal revenue product). In this case, we would have

$$\$1{,}000{,}000 + 600{,}000(QB) = \$10{,}000{,}000 - 300{,}000(QB).$$

Solving for the employment level, we find QB equals 10. The wage can be found by substituting $QB = 10$ into either the supply or the demand. In either case, we find that the competitive wage is $7 million.

If there is monopsony power in the *NFL*, then the number employed will be determined by the equality of the marginal revenue product and the marginal factor cost. Given the supply of quarterbacks, the marginal factor cost will be

$$MFC = \$1{,}000{,}000 + 1{,}200{,}000(QB).$$

Profit maximization requires the equality of MRP and MFC:

$$\$10{,}000{,}000 - 300{,}000(QB) = \$1{,}000{,}000 + 1{,}200{,}000(QB),$$

[8] Of course, the suppliers care a great deal about this redistribution and take steps to try to prevent it. We address this issue later.

which yields an optimal number of quarterbacks: $QB = 6$. This value must be substituted into the supply curve to determine the wage:

$$w = \$1{,}000{,}000 + 600{,}000(6),$$
$$= \$4{,}600{,}000.$$

The result of monopsony is to reduce the wage from \$7.0 million to \$4.6 million and the employment from 10 to 6.

Monopsonistic exploitation is the difference between MRP when $QB = 6$ and the wage paid, which is \$4,600,000. Substituting $QB = 6$ into MRP yields an MRP of \$8,200,000. Thus, the extent of monopsonistic exploitation is \$3,600,000.

The social welfare loss is given by

$$\tfrac{1}{2}(MRP - w)(QB_L - QB_M) = 1/2(\$3{,}600{,}000)(4),$$

which is equal to \$7,200,000.

4 SOURCES OF MONOPSONY POWER

In professional sports, the major leagues historically have used a variety of tactics to obtain and retain monopsony power over the players. These tactics include (1) incorporating the reserve clause in the standard player contracts, (2) the use of reverse-order player drafts, and (3) outright collusion.

4.1 Reserve Clause

As we saw in the discussion of competitive balance, the reserve clause in the standard player contract bound a player to one team for as long as that team wanted to employ the player's services. The player's only alternative was to retire from the league and change occupations. Once under contract, then, a player dealt with a pure monopsonist. There was no one else who could or would bid for his services. For most premier athletes, there are no alternative occupations that are even close in terms of compensation. A few athletes can play other sports and can credibly threaten to go elsewhere, but not many. Bo Jackson and Deion Sanders played football and baseball at the major league level. Danny Ainge played basketball and baseball. Not many athletes can do that. Michael Jordan, arguably the best basketball player of all time, tried his hand at baseball. He was mediocre and could not play at the major league level. Most successful professional athletes stick to one sport. Because these athletes have no reasonable alternatives outside that one sport, the reserve clause put them at the mercy of the teams that owned their contracts. Each team, then, was a pure monopsonist with respect to the players it had under contract. As we will see subsequently, there is empirical evidence that the teams showed little mercy in their dealings with players subject to the reserve clause.

4.2 Player Drafts

The four major sports leagues in the United States employ a reverse-order player draft. Players entering the league are chosen by the teams in an orderly

fashion. The team with the worst record picks first, the next worst team picks second, and so on.[9] In principle, the reason for the reverse order is to help the weaker teams improve the quality of their roster and thereby improve competitive balance. In practice, however, draft choices are often traded. As a result, some strong teams get to move up in the draft and thereby protect the strength of their rosters. The draft therefore does not necessarily improve competitive balance.

From a competitive perspective, the draft eliminates competition for the best young players. Without the player draft and other constraints imposed through collective bargaining, one can only imagine how much some NBA team would have paid for Greg Oden in 2007. As it turns out, Oden did fairly well by most standards, but for the kind of big man like him who comes along once in a blue moon, his initial contract was paltry.

4.3 Collusion among the Clubs

With the demise of the reserve clause, players gained a measure of freedom. There are still some limits, which are part of the Collective Bargaining Agreement, but there are completely unrestricted free agents in all major league sports. Free agents should get the benefit of competition for their services, which would mean higher salaries. Faced with that prospect, owners have simply colluded at times to avoid competing in the player market. The owners may simply agree not to raid the rosters of rival teams. In other words, they may agree not to bid competitively in free-agent markets. By agreeing not to compete, they reduce a player's options and maintain each club's monopsony power. In the next section, we examine collusion in MLB's free-agent market to illustrate this strategy.

5 COLLUSION IN MLB'S FREE-AGENT MARKET

For decades, the owners of Major League Baseball teams were protected from competition by the reserve clause, which bound a player to the team that brought him to the majors. The validity of the reserve clause was challenged several times as a violation of the antitrust laws. These challenges, however, were unsuccessful.[10] Eventually, the Collective Bargaining Agreement between MLB and the MLBPA, the players' union, basically eliminated a player's right to file an antitrust suit. Instead, the agreement allowed for arbitration to resolve what would otherwise be antitrust suits. In 1975, a labor arbitrator set pitchers Dave McNally and Andy Messersmith free, which spelled the end of the reserve clause in MLB. Players became free agents and began receiving salaries more in line with their market value.

Salaries in MLB began to rise dramatically. During the 1976–1980 period, average salaries increased by 279 percent. In the subsequent five-year period,

[9] In the NBA, the worst teams are subject to a lottery system, which complicates matters. The idea, however, is the same: the worst teams pick first.

[10] The history of these unsuccessful antitrust challenges is examined in Chapter 22.

1980–1985, average salaries increased by another 287 percent. From relatively meager beginnings, multiyear million-dollar contracts began to appear. For example, during the 1984–1985 free-agency period, Bruce Sutter signed a six-year contract with the Atlanta Braves that was reportedly worth $10.1 million, which was an unheard of sum at the time. Rick Sutcliffe signed a five-year contract with the Chicago Cubs that was worth $9.6 million.[11] From the owners' perspective, it was clear that something had to be done to halt the salary stampede and restore some semblance of fiscal order. The owners were not used to sharing so much of the surplus with their hired hands.

The owners decided to collude rather than compete in the free-agent market. Apparently, they decided simply not to make serious offers to free agents from other teams. In 1985–1986, there were 29 free agents on the market. In stark contrast to earlier years, only one player received an offer from a new team. In the following free-agency period of 1986–1987, there were 19 players available, but no one received a serious offer from a new team. In 1987–1988, the experience was about the same, and this pattern continued in subsequent years as well. How did the owners orchestrate this conspiracy to deny the players the benefits of a competitive free-agent market?

Among other things, the owners established a salary offer data bank. Each team agreed to report any offers that it made to free agents. The anticompetitive potential for such a reporting commitment is fairly obvious. The owners had agreed among themselves to refrain from competitive bidding. Reports to the data bank revealed whether a club was cheating on the agreement. An owner who was tempted to cheat knew that retaliation could be swift if he succumbed to the temptation. Moreover, when each club made its offers known to the other owners, the offers tended to be lower. The result has been described as "quiet cooperation." The players refused to put up with the lack of competitive bidding in the free-agent market.

Unable to file an antitrust suit because of the Collective Bargaining Agreement, the players filed a grievance with a labor arbitrator. This grievance pertained to the 1985–1986 free-agency period. Although the owners steadfastly denied that they had been colluding and argued that they were unilaterally (and simultaneously) practicing fiscal restraint, arbitrator Tom Roberts found the lack of interest in free agents to be "inexplicable." Accordingly, he ruled in favor of the players. The owners were outraged and demanded that a new arbitrator be appointed to deal with the grievances for subsequent years. This demand was met, and George Nicolau replaced Tom Roberts, but the change did not help the owners.

As each subsequent year was examined, the new arbitrator continued to rule in favor of the players. The owners quickly saw the handwriting on the wall and agreed to settle all cases for all years for $280 million. Splitting this sum among the players proved to be difficult. Some 843 players filed 3,173 claims for losses due to the collusion. These claims totaled $1.3 billion, which was more than 4.5 times the total settlement fund.

[11] These values are incorrect from an economic standpoint. Why?